

WE CLAIM:

1. An unsupported catalyst composition which comprises one or more Group VIb metals, one or more Group VIII metals, and a refractory oxide material which comprises 50 wt% or more titania, on oxide basis.
2. Catalyst composition as claimed in claim 1, wherein the refractory oxide material comprises in the range of from 70 to 100 wt% titania.
3. Catalyst composition as claimed in claim 2, wherein the refractory oxide material comprises in the range of from 95 to 100 wt% titania.
4. A catalyst composition as claimed in claim 3, wherein the refractory oxide material comprises in the range of from 5 to 70 wt% of the total catalyst, on an oxide basis.
5. A catalyst composition as claimed in claim 4, wherein the refractory oxide material comprises in the range of from 15 to 25 wt%, preferably 20 wt%, of the total catalyst.
6. A catalyst composition as claimed in claim 5, wherein the Group VIb metal component is selected from nickel, cobalt, and mixtures thereof, and the Group VIII metal component is selected from molybdenum, tungsten and mixtures thereof.
7. A process for the preparation of a catalyst composition as claimed in claim 1, wherein one or more Group VIb metal compounds are combined with one or more Group VIII metal compounds, and with a titania-containing refractory oxide material, in the presence of a protic liquid and an alkali compound; and the catalyst composition is recovered following precipitation.
8. A process as claimed in claim 7, wherein at least one of the metal compounds is partly in solid state and partly in dissolved state.

9. A process as claimed in claim 8, which comprises heating a precursor composition which is in the form of, or is recovered from, a slurry, after aging at a temperature in the range of from 20 to 95 deg C for a minimum of 10 minutes, said slurry being obtained by (co)precipitating, at a sufficient time and temperature, one or more Group VIB compounds, one or more Group VIII compounds, one or more refractory oxide materials, and an alkali compound, in a protic liquid.
10. A process as claimed in claim 9, wherein the titania used has a particle diameter of 10 microns or less.
11. A process as claimed in claim 10, wherein all metal compounds are added to the protic liquid as solids.
12. A process as claimed in claim 11, wherein the catalyst composition is recovered by spray-drying.
13. A process as claimed in claim 12, wherein alkali compound is present and is ammonia or a component that will generate ammonium ions in the protic liquid used.
14. A process as claimed in claim 13, wherein the prepared catalyst composition is further subjected to any one or more of the following process steps carried out in any appropriate order: cooling; optionally isolating; drying; shaping, preferably by extrusion using no extrusion aids; calcining; sulphiding.
15. A hydroprocessing method, comprising: contacting under hydroprocessing conditions a hydrocarbon feed with an unsupported catalyst composition comprising at least one Group VIII metal, at least one Group VIB metal and a refractory oxide material of which at least 50 wt% is titania.
16. A hydroprocessing method, comprising: contacting under hydroprocessing conditions a hydrocarbon feed with the catalyst as claimed in claim 1, 2, 3, 4, 5, or 6 or the catalyst as prepared by the process of claim 7, 8, 9, 10, 11, 12, 13 or, 14.

17. A composition as prepared by the process of claim 7, 8, 9, 10, 11, 12, 13 or 14.

18. A method of preparing a catalyst composition, said method comprises:

combining a Group VIb metal compound, a Group VIII metal compound and a titania-containing refractory oxide material, in the presence of a protic liquid; and recovering by precipitation said catalyst composition comprising at least 50 wt% titania on an oxide basis.

19. A method as recited in claim 18, wherein at least one of the metal compounds combined in the presence of said protic liquid is partly in solid state and partly in dissolved state.

20. A method as recited in claim 19, wherein said recovering step includes:

subjecting a mixture resulting from said combining step to coprecipitation conditions thereby forming a coprecipitate solid and heating said coprecipitate solid at an elevated temperature so as to yield said composition.

21. A method as recited in claim 20, wherein said protic liquid comprises water, and further combined with said non-noble Group VIb metal compound, said non-noble Group VIII metal compound, and said titania-containing refractory oxide is an alkali compound.

22. A method as recited in claim 21, wherein said coprecipitation conditions include maintaining said mixture at a coprecipitation temperature in the range of from 25 to 95 °C for a period of time in the range of from 10 minutes to 2 hours.

23. A method as recited in claim 22, wherein said elevated temperature is in the range of from 100 °C to 600 °C.

24. A method as recited in claim 23, wherein said alkali compound is ammonia or a material that will generate ammonium ions in the protic liquid of said mixture.

25. A method as recited in claim 24, wherein the titania used in said combining step has a particle diameter of 10 microns or less.
26. A method as recited in claim 25, wherein said catalyst composition is recovered by spray drying.